

# ABSTRACT OF THE DISCLOSURE

- 5 An optical imaging system is provided that includes a rod lens array and has the optimum refractive index distribution for achieving a high resolving power. The refractive index distribution of rod lenses can be expressed by

$$Eq. 45 \quad n(r)^2 = n_0^2 \cdot \{1 - (g \cdot r)^2 + h_4 \cdot (g \cdot r)^4 + h_6 \cdot (g \cdot r)^6 + h_8 \cdot (g \cdot r)^8\}$$

- 10 where  $r$  is a radial distance from the optical axis of the rod lenses,  $n_0$  is a refractive index on the optical axis of the rod lenses, and  $g$ ,  $h_4$ ,  $h_6$  and  $h_8$  are refractive index distribution coefficients. The refractive index distribution coefficients  $h_4$ ,  $h_6$  and  $h_8$  are set on a spheroid in a Cartesian coordinate system with  $h_4$  being x-axis,  $h_6$  being y-axis and  $h_8$  being z-axis. The  
15 spheroid is defined by a vector  $X^*$  that is expressed by

$$Eq. 46 \quad X^* = (x, y, z) = O^* + k_A A^* + k_B B^* + k_C C^*$$

- 20 where  $O^*$  is a vector from the origin of the Cartesian coordinate system to the center of the spheroid,  $A^*$ ,  $B^*$  and  $C^*$  are vectors in the directions of the major axis, the mean axis and the minor axis of the spheroid, respectively, and  $k_A$ ,  $k_B$  and  $k_C$  satisfy  $k_A^2 + k_B^2 + k_C^2 \leq 1$ .